

REMARKS

Claims 1-85 are pending. Claims 51-85 are withdrawn from consideration. Claims 1-50 are rejected. Claims 86-94 are new. No new matter has been added. The specification is objected to.

I. Specification

On page 1 of the Action, the Examiner checked the box indicating an objection to the specification. However, the body of the Action does not state the reason for the objection. The applicant respectfully requests that the Examiner explain or withdraw the objection to the specification.

II. Claim Objections

Claims 18-30 are objected to under 37 CFR 1.75(c) as being in improper form because of claims based on a multiple dependent claim 17. The applicant submitted a request for new office action and request to restart period for response on December 4, 2002. Multiple dependent claims are explicitly permitted under 37 C.F.R. 1.75(c). Claim 17 recites "[t]he device of claim 13 or 14", and thus properly refers to the preceding claims in the alternative. The Examiner's attention is directed to MPEP 608.01(n)(I)(A), showing that the use of "or" is an accepted format for a multiple dependent claim.

Claims which depend from multiple dependent claims are also explicitly permitted under 37 C.F.R. 1.75(c). The Examiner's attention is directed to MPEP 608.01(n)(I)(F) (and particularly to claim 7 in the table), for a discussion on how to treat claims depending from multiple dependent claims. The application does not include multiple dependent claims which depend from other multiple dependent claims.

The Examiner's attention is also directed to Examiner Note 1 from Form Paragraph 7.45 in MPEP 608.01(n)(I)(A).

The applicant respectfully requests a new office action in which claims 18-30 are treated on the merits, and respectfully requests that the period for response be restarted.

III. Section 112 Rejections

Claims 1, 5, 7, 32, 36, 37, 40, 41, 42, 45, 46, 47, and 49 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention.

Amended claim 1 states that the laminate encapsulates at least the active component.

Claims 5, 7, and 32 were rejected as allegedly lacking antecedent basis. Claims 5 and 7 have been amended to recite that "the substrate" is selected from a group of materials. Claim 32 has been amended to recite "said first and second laminates" to correct the antecedent basis for this limitation.

The applicant asserts that the phrase "mechanical integrity" in claim 33 has an ordinary meaning, and is not an indefinite term. "During the process" has been amended to read "during the laminating process" to specify the process referred to by claim 33.

In claims 22, 27, 36, 47, and 49 the term "good sealing" has been replaced with "sealing" to remove an indefinite term. Claims 23, 28, 37 and 42, now read "between 80°C and 140°C" to clarify the terminology of the claim.

Claim 40 describes the metallic material comprising copper or aluminum and the dielectric material comprising silicon monoxide, silicon oxide, silicon dioxide, silicon nitride (Si_2N_4), or a metal oxide. The Examiner asserts that it is not clear how aluminum may comprise other materials such as silicon monoxide, silicon oxide, etc. The applicant believes it is clear that claim 40 as written describes the dielectric materials as comprising silicon monoxide, silicon oxide, etc., and not aluminum as comprising these compounds.

The Examiner reads claim 45 as reciting the limitation "the laminates" and finds no antecedent basis for this limitation. Claim 45 in line 1 has been amended "the first laminate". The applicant therefore asserts that there is sufficient antecedent basis for this limitation as claim 45 is indirectly based on claim 1, which includes the limitation of a first laminate.

IV. Section 102 Rejections

Claims 1-17 and 31-50 are rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent Number 6,268,695 ("Affinito"). The applicant has amended claim 1 to clarify the differences between the applicant's invention and the prior art.

As amended, claim 1 recites a device. The device includes a substrate with at least one active component formed on the top surface of the substrate. A laminate, which encapsulates the active component is also over the top surface of the substrate. The device has support posts in its non-active regions, which provide support for the laminate.

Affinito describes an environmental barrier material for an organic light emitting device. *See* Abstract, lines 1-2. The barrier is three layers, the three layers including a ceramic layer sandwiched between two polymer layers. *See* column 2, lines 62-65, and FIG. 2.

Amended claim 1 recites the limitation of support posts in non-active regions of the device to provide support for the laminate. Support posts are disclosed on page 5, lines 12-20. In addition, support posts are disclosed on page 5, lines 3-13 of "Encapsulation of a Device", PCT International Publication Number WO 01/04963, published January 18, 2001, which was incorporated in the present application on page 5, line 23 and page 6, lines 1-2. The specification has been amended to include relevant parts of PCT International Publication Number WO 01/04963 discussing the support posts. The material added consists of the same material incorporated by reference in the referencing application.

Affinito does not disclose a support post structure. Therefore, the applicant submits that Affinito does not render claim 1 obvious. Claims 1-50 are based directly or indirectly on claim 1. For at least the same reasons as stated for claim 1, the applicant asserts that claims 1-50 are similarly allowable.

Attached is a marked-up version of the changes being made by the current amendment.

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Page : 13

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E/GS

Applicant asks that all claims be allowed. Please apply any other charges or credits to
Deposit Account No. 06-1050.

Respectfully submitted,

Date: 4/22/03

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Version with markings to show changes made

In the specification:

Paragraph beginning at page 5, line 8 has been amended as follows:

In the specification:

Please amend the paragraph beginning on page 5 line 8 as follows:

The OLED pixels are materials formed on a substrate 105. In one embodiment, the substrate comprises a transparent substrate and serves as the display surface. The substrate is prepared to support a laminate 120. For example, supports 150 are provided surrounding the OLEDs to support the laminate. The laminate covers the device and hermetically seals the components, protecting them from the environment. The device can also include support posts (not shown) in the non-active regions to provide support for the laminate. This prevents the laminate from collapsing onto the components and affecting the device's functionality. Support posts are particularly useful for flexible devices. Providing support posts in non-active regions of the device is described in concurrently filed International Patent Application titled "Encapsulation of a Device", [(attorney docket number 99E 1975)]PCT International Publication Number WO 01/04963 A1, published January 18, 2001, which is herein incorporated by reference[for all purposes].

The support posts can be formed from a dielectric material to electrically isolate the active regions. The material can be directly or indirectly patternable material. The directly patternable material can be photopatternable or photosensitive material that can be directly patterned. Photopatternable materials include, for example, photosensitive polyimide, photosensitive polybenzoxazole, photoresists, photoresists based on novalac systems, and dry film resist materials. Photoresists based on novalac systems are particularly useful since they can be cured and crosslinked to provide improved mechanical integrity over other types of non-curable resists. Indirectly patternable materials include, for example, spin-on glass materials, polyimide, polybenzoxazole, polygultarimide, benzocyclobutene, polymers such as polyethylene (PE), polystyrene (PSO), polypropylene (PP), or inorganic materials such as silicon dioxide, silicon nitride, and aluminum oxide.

In the claims:

Claims 86-94 have been added.

Claims 1, 2, 5, 7, 18-19, 22-24, 26-29, 32, 33, 36-38, 40-43, and 45-50 have been amended as follows:

1. (Amended) A device comprising:
a substrate;
at least one active component formed on a top surface of the substrate; [and]
a first laminate over the top surface of the substrate, encapsulating at least the active component[the device.]; and
support posts in non-active regions of said device, providing support for said first laminate.
2. (Amended) The device of claim 1 wherein the active component [device comprises an [OLED] organic light emitting diode device.
5. (Amended) The device of claim 4 wherein the substrate comprises a substrate material [is] selected from a group of materials consisting of polymer, glass, ceramic, or semiconductor material.
7. (Amended) The device of claim 6 wherein the substrate [material] is selected from a group of materials consisting of polymer or glass.
18. (Amended) The device of claim 17 wherein the first and second laminates comprise[s]:
a laminate substrate; and
a sealant on a surface of the laminate substrate that contacts the device.

19. (Amended) The device of claim 18 wherein the laminate substrate comprises a material having a sufficient thermal stability to maintain mechanical integrity during the laminating process[ing].

22. (Amended) The device of claim 21 wherein the sealant comprises an activation temperature which causes the sealant to flow to ensure [good] sealing between the laminate substrate and the device.

23. (Amended) The device of claim 22 wherein the activation temperature is [below a temperature which damages the device] between 80°C and 140°C.

24. (Amended) The device of claim 23 wherein the first and second laminates comprise[s] a barrier layer on the laminate, the barrier layer inhibits the diffusion of air or moisture.

26. (Amended) The device of claim 25 wherein the metallic material comprises copper or aluminum and the dielectric material comprises silicon monoxide, silicon oxide, silicon dioxide, silicon nitride (Si_2N_4), or a metal oxide.

27. (Amended) The device of claim 26 wherein the sealant comprises an activation temperature which causes the sealant to flow to ensure [good] sealing between the laminate substrate and the device.

28. (Amended) The device of claim 27 wherein the activation temperature is [below that which damages the device] between 80°C and 140°C.

29. (Amended) The device of claim 18 wherein the first and second laminates comprise[s] a barrier layer on the laminate, the barrier layer inhibits the diffusion of air or moisture.

32. (Amended) The device of claim 31 wherein [the] said first and second laminates comprise[s]:

a laminate substrate; and
a sealant on a surface of the laminate substrate that contacts the device.

33. (Amended) The device of claim 32 wherein the laminate substrate comprises a material having a sufficient thermal stability to maintain mechanical integrity during the laminating process[ing].

36. (Amended) The device of claim 35 wherein the sealant comprises an activation temperature which causes the sealant to flow to ensure [good] sealing between the laminate substrate and the device.

37. (Amended) The device of claim 36 wherein the activation temperature is [below a temperature which damages the device] between temperatures of 80°C and 140°C.

38. (Amended) The device of claim 37 wherein the first and second laminates comprise[s] a barrier layer on the laminate, the barrier layer inhibits the diffusion of air or moisture.

40. (Amended) The device of claim 39 wherein the metallic material comprises copper or aluminum and the dielectric material comprises silicon monoxide, silicon oxide, silicon dioxide, silicon nitride (Si_2N_4), or a metal oxide.

41. (Amended) The device of claim 32 wherein the sealant comprises an activation temperature which causes the sealant to flow to ensure good sealing between the laminate substrate and the device.

42. (Amended) The device of claim 41 wherein the activation temperature is [below that which damages the device] between temperatures of 80°C and 140°C.

43. (Amended) The device of claim 32 wherein the first and second laminates comprise[s] a barrier layer on the laminate, the barrier layer inhibits the diffusion of air or moisture.

45. (Amended) The device of claim 2 wherein the first laminate comprises:
a laminate substrate; and
a sealant on a surface of the laminate substrate that contacts the device.

46. (Amended) The device of claim 45 wherein the laminate substrate comprises a material having a sufficient thermal stability to maintain mechanical integrity during the laminating process[ing] between temperatures of 80°C and 140°C.

47. (Amended) The device of claim 46 wherein the sealant comprises an activation temperature which causes the sealant to flow to ensure [good] sealing between the laminate substrate and the device.

48. (Amended) The device of claim 47 wherein the first laminate comprises a barrier layer on the laminate, the barrier layer inhibits the diffusion of air or moisture.

49. (Amended) The device of claim 45 wherein the sealant comprises an activation temperature which causes the sealant to flow to ensure [good] sealing between the laminate substrate and the device.

50. (Amended) The device of claim 45 wherein the first laminate comprises a barrier layer on the laminate, the barrier layer inhibits the diffusion of air or moisture.

86. (New) The device of claim 1 wherein the support posts comprise photopatternable material.

87. (New) The device of claim 86 wherein the photopatternable material is a directly photopatternable material selected from a group consisting of photosensitive polyimide, photosensitive polybenzoxalole, photoresists, photoresists based on novolac systems or dry film resist materials.

88. (New) The device of claim 86 wherein the indirectly photopatternable material is selected from the group consisting of spin-on glass, polyimide, polybenzoxazole, polyglutarimide, benzocyclobutene, polymers, polyethylene, polystyrene, polystyrene, polypropelnyne, silicon dioxide, silicon nitride or aluminum oxide.

89. (New) The device of claim 86 wherein the support posts comprise a multi-layer architecture having at least first and second support layers.

90. (New) The device of claim 87 wherein the support posts comprise a multi-layer architecture having at least first and second support layers.

91. (New) The device of claim 88 wherein the first support layer comprises a dielectric material to provide electrical isolation for the active component.

92. (New) The device of claim 89 wherein the first support layer comprises a dielectric material to provide electrical isolation for the active component.

93. (New) The device of claim 89 wherein the first and second support layers comprise directly or indirectly photopatternable material.

94. (New) The device of claim 90 wherein the first and second support layers comprise directly or indirectly photopatternable material.